3.0 Permit Requirements

E.5. County Property Management

Baltimore County shall identify all county-owned facilities requiring NPDES stormwater general permit coverage and submit Notices of Intent (NOI) to MDE for each. The status of pollution prevention plan development and implementation shall be submitted annually.

E.6. Road Maintenance

A plan to reduce pollutants associated with road maintenance activities shall be developed and implemented. At a minimum, an annual progress report shall be submitted that documents the following activities:

a. Street sweeping;

b. Inlet cleaning;

c. Reducing the use of pesticides, herbicides, fertilizers, and other pollutants associated with roadside vegetative management practices through the use of integrated pest management (IPM); and

d. Controlling the overuse of winter weather deicing materials through continual testing and improvement of materials, equipment calibration, employee training, and effective decision-making.

3.1 Introduction

Baltimore County has established several programs to control the amount of pollution that reaches the stream systems and landfills: a Storm Drain Cleaning Program, a Street Sweeping Program, and a Hazardous Waste Collection Program. Baltimore County Department of Environmental Protection and Sustainability (EPS) has also identified those county owned sites that require a NPDES stormwater general permit and is assisting them in preparing Pollution Prevention Plans. These include good house keeping and best management practices to prevent contaminants from leaving the site during rainstorms or a spill.

Both the Storm Drain Cleaning Program and the Street Sweeping Program are the responsibility of the Baltimore County Department of Public Works (DPW). Within the Department of Public Works, the Bureau of Utilities handles the Storm Drain Cleaning program. The Storm Drain Cleaning Program was originally created to remove the sediment from the storm drain systems in the watersheds of dredged tidal creeks, thereby increasing the longevity of the original dredging. The program has since been expanded to clean the county's entire storm drain system, including the drain inlets, connecting pipes and outfalls. Debris, sediment, and pollutants can also be taken off the streets before they enter the storm drain system. This is accomplished with the Street Sweeping Program that is managed by the Bureau of Highways.

The Hazardous Waste Collection Program is the responsibility of the Baltimore County EPS Environmental Health Section. Citizens can come and drop off unwanted household chemicals, paints, pesticides, medicines, mercury thermometers, fluorescent bulbs, rechargeable batteries, computers and home electronics, ammunition and automotive fluids for recycling or proper

disposal. These items are accepted at the Eastern Landfill from April until November. There are also two collection events in the fall and spring at additional locations. Medicines, which could include narcotics and other regulated substances, are accepted at the collection events only.

3.2 County Property Management

Over the last few years, several meetings of the Baltimore County NPDES Management Committee were held. The first meeting in December 2005 presented the requirements of the renewed NPDES permit to the Management Committee, including the requirement that certain County owned facilities acquire an NPDES Industrial Stormwater General Permit. A NPDES Management Committee meeting in February 2006 covered how to fill out the Notice of Intent (NOI) and the elements of the Stormwater Pollution Prevention Plan (SWPPP). A third meeting in May 2006 covered in more detail the elements of a SWPPP, and used a highway shop to demonstrate how to conduct a site assessment and the types of controls that should be considered in the SWPPP. In December 2009, a meeting was held with Baltimore County Public Schools to get the status on NOIs and SWPPPs for school sites. In October 2010, a meeting was held with Baltimore County Vehicle Operations and Maintenance to discuss requirements for fueling stations and maintenance facilities. Planned for 2011, is an advisory meeting with Baltimore County Revenue Authority (parking garages and golf courses) on NOIs and SWPPPs.

3.2.1 Status with NPDES Industrial Stormwater Discharge General Permit

Baltimore County EPS has been assisting other County Departments to gain compliance with the NPDES industrial stormwater discharge general permit requirements. Table 3-1 shows the status of county facilities compliance with the General Permit for Industrial Stormwater Discharge. EPS has identified 45 county-owned facilities that may require NPDES permit coverage. EPS provides guidance to other County agencies with the preparation of their Stormwater Pollution Prevention Plan (SWPPP) and the NOI or NEC for submission to MDE.

Table 3-1: NPDES Permit Compliance Status

County Department	# of Facilities	Notice of Intent (NOI)	Stormwater Pollution Prevention Plan (SWPPP)	No Exposure Certification
Community College of Baltimore County	3 Campuses	Yes	Yes	N/A
Department of Public Works Highways	11of 14 Shops/Salt	Yes	Yes	N/A
Baltimore County Public Schools - Transportation	11 Bus Maintenance	Yes for 10 of 11	In progress	N/A
Baltimore County Public Schools – Grounds	3 Grounds Maintenance	Yes for 3 of 3	In progress	N/A
Vehicle Operations and Maintenance	4 Maintenance Shops	In progress	In progress	In progress
Equipment Operation	2 Maintenance Shops	In progress	In progress	In progress

and Maintenance				
Golf Courses – Revenue Authority	5 golf courses	In progress	In progress	N/A
Recreation and Parks	2 maintenance shops	In progress	In progress	In progress

3.3 Storm Drain Cleaning Program

3.3.1 Storm Drain Cleaning Overview

The Baltimore County storm drain system consists of approximately 2,040,000 linear feet (388 miles) of storm drainpipe, 14,400 inlets, and 3,460 outfalls. In order to keep the entire system clean of trash, debris, and sediment, the Department of Public Works maintains three storm drain cleaning vehicles and employs three crews of two men each on a daily basis to clean the storm drains and pipes. Removing the material from the storm drain system reduces street flooding, a potential safety hazard, and aids in the detection of illicit connections.

Each time a crew cleans an inlet or pipe the amount of debris removed is recorded on a data sheet that typically contains all cleaning records for that particular location. Completed data sheets are sent to EPS, where the data is entered into a database. The database facilitates reporting for NPDES purposes.

3.3.2 Storm Drain Cleaning Data Analysis

The data entered into the database are analyzed for a number of measures, including the amount of material removed per inlet, the amount of material removed per linear foot of pipe cleaned, total amount of material removed by watershed, and the amount of pollutants removed as a result of the program.

Inlet data are reported as the average annual cubic feet of material removed per inlet, and pipe data are reported in cubic feet of material removed per linear foot of pipe. The removal rates for 1993 through 2010 are presented in Table 3-2. Figure 3-1 shows a yearly comparison of the number of inlets cleaned and the total volume of material removed. Figure 3-2 shows the mean volume of debris removed per inlet. Figure 3-3 shows a yearly comparison of the length of pipe cleaned and the amount of material removed, and Figure 3-4 shows the mean volume of debris removed per linear foot of pipe.

Table 3-2: Removal Rates of Inlet and Pipe Cleaning by Year

Year	Inlet Vol. Cu. Yd.	# Inlets	Vol. / Inlet Cu. Yd	Pipe Vol. Cu. Yd.	Length in feet	Vol. / Ft. Cu. Yd.
1993	760	8,955	0.08	1,186	68,830	0.0172
1994	769	2,615	0.29	347	21,193	0.0164
1995	642	1,532	0.42	306	14,491	0.0211
1996	1,536	1,347	1.14	1,558	67,676	0.0230
1997	1,731	1,485	1.17	2,822	119,900	0.0235
1998	2,059	1,178	1.75	988	93,918	0.0105
1999	662	462	1.43	446	38,451	0.0116
2000	689	580	1.19	672	89,145	0.0075
2001	902	746	1.21	585	46,319	0.0126
2002	919	602	1.53	409	34,384	0.0118
2003	660	428	1.54	519	30,374	0.0171
2004	898	653	1.37	1,169	54,795	0.0213

2005	1,385	888	1.56	1,001	53,069	0.0189
2006	950	659	1.44	538	30,891	0.0174
2007	429	223	1.92	179	10,257	0.0175
2008	664	377	1.76	238	16,572	0.0144
2009	591	373	1.58	288	19,450	0.0148
2010	354	313	1.13	172	13,310	0.0129
Totals	**16,600**	**23,416**		**13,423**	**823,025**	

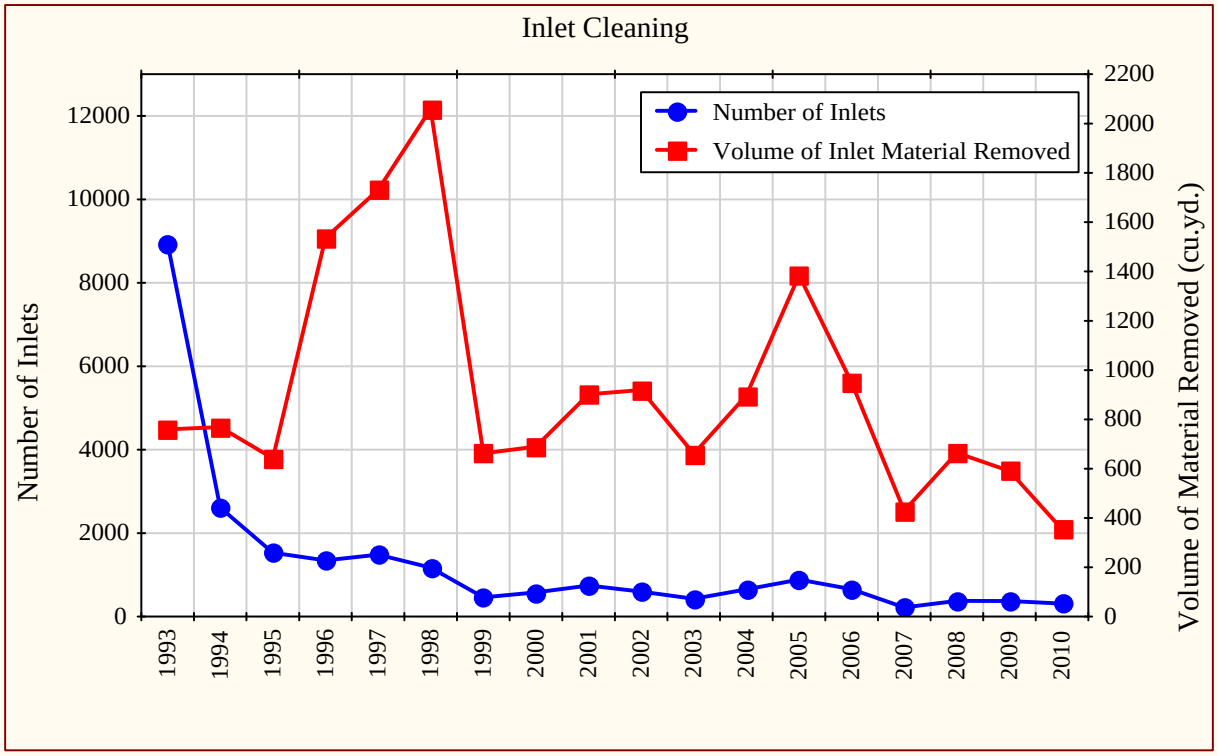

Figure 3-1: Summary Report for Inlets

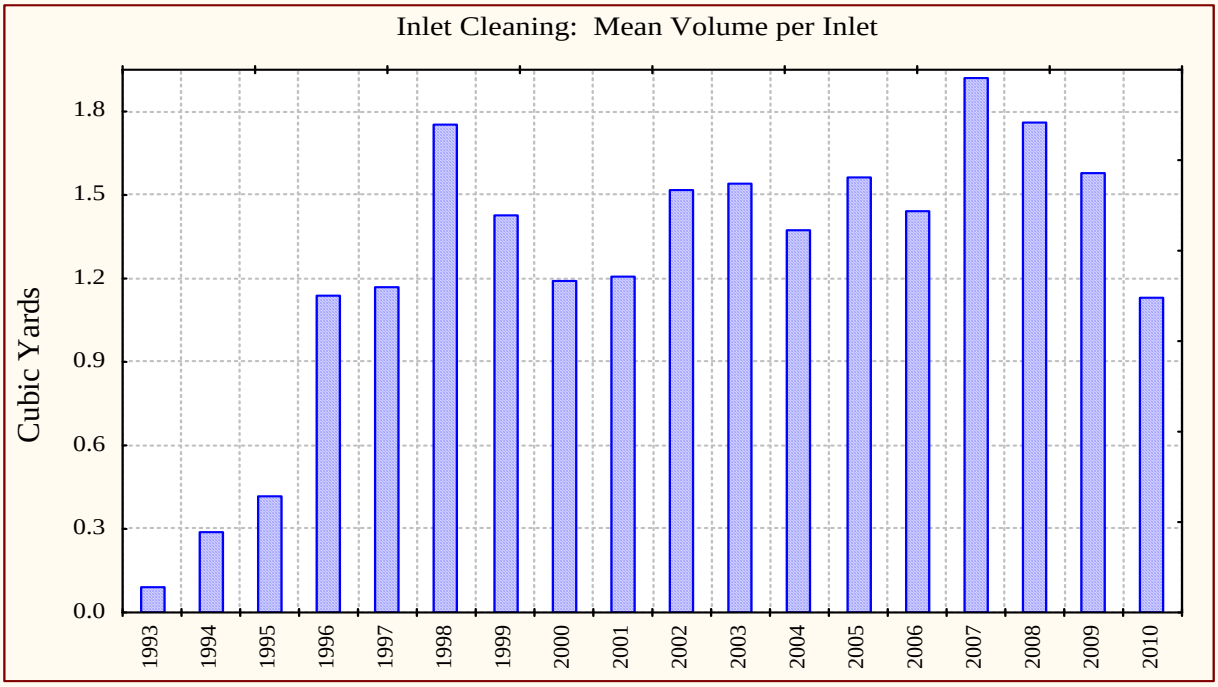

Figure 3-2: Annual Inlet Debris Removal Rates

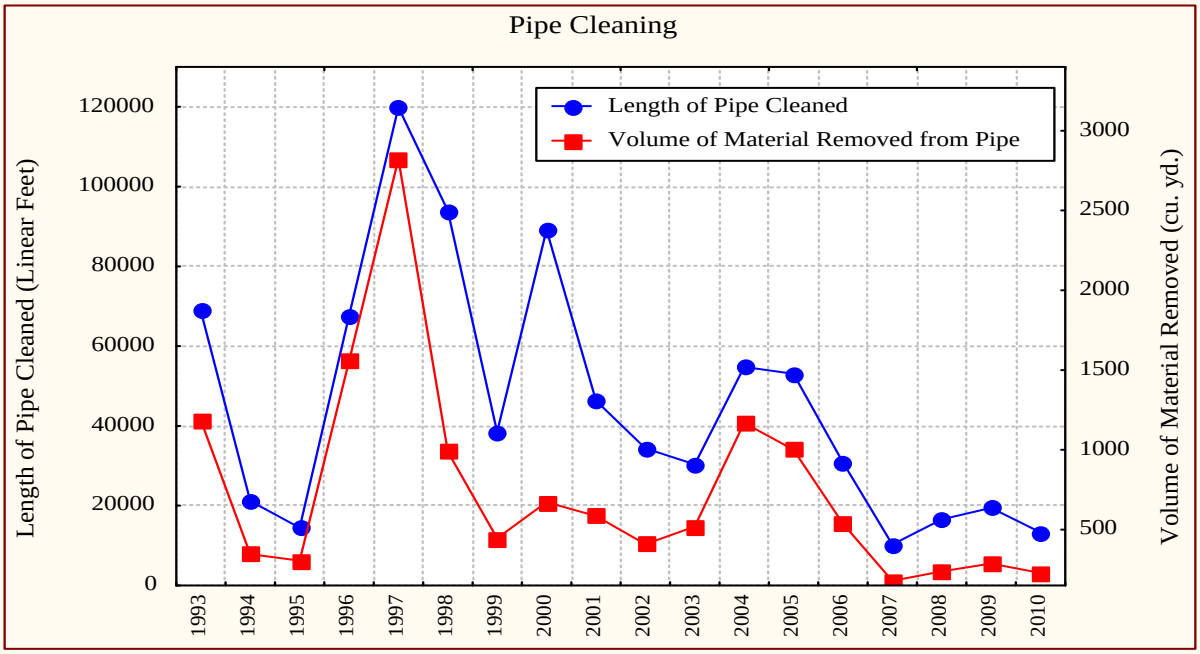

Figure 3-3: Summary Report for Pipes

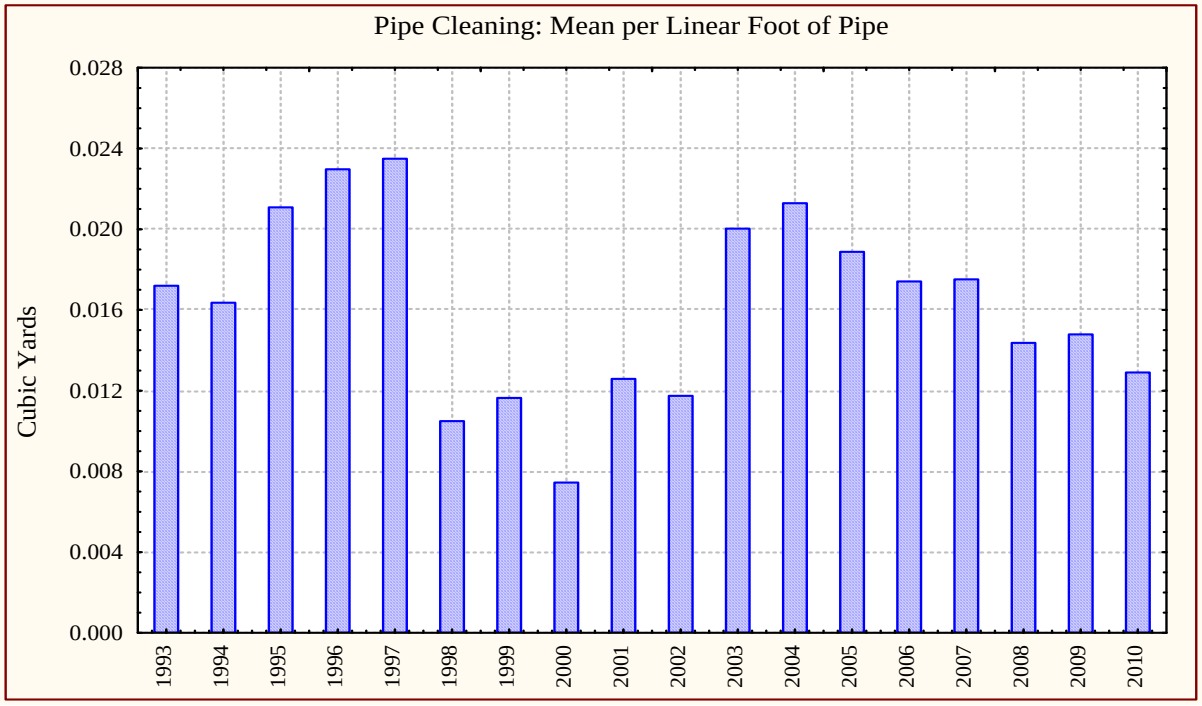

Figure 3-4: Annual Pipe Debris Removal Rates

While the number of inlets cleaned has remained fairly steady since 1999, the volume removed per inlet has been more variable. For the period from 1993 through 1998, the average number of inlets cleaned was ~2,850 per year in contrast to ~525 per year in the 1999-2010 time period. The average amount of material removed per inlet increased from ~0.8 cubic yards per inlet to ~1.5 cubic yards per inlet for the same two time periods. In the early years of the program (1993-1995), all inlets within the county were cleaned, some with little or no accumulation of material. This resulted in low volumes of material removed per inlet cleaned. This method was changed after 1995. The current method does not include routine cleaning of storm drains; however, known problem inlets and pipes are regularly cleaned, in addition to being cleaned based on comments or complaints received from citizens. During the winter months (November – March), the Department of Public Works responds only to emergencies due to the temperature. Therefore, the numbers of pipes and inlets cleaned after 1995 varies each year.

The volume of material removed from inlets grew beginning in 1993 and peaked in 1998, at over 2,000 cubic yards of material removed (Figure 3-1). The total amount of material removed was lower for the years 1999 through 2003. There was an upward trend in 2004 and 2005, and the volume of material removed has been continuously lower since 2006.

The largest amount of material removed from pipes was in 1997. This was also the greatest length of pipe cleaned (see Figure 3-4). The average length of pipe cleaned in the time period 1993 through 1998 was ~64,500 linear feet compared to ~36,000 linear feet in the 1999 through 2010 time period. The volume removed per linear foot decreased from 0.019 cubic yards to 0.015 cubic yards for those two time periods.

It should also be noted that drought conditions from 1999 through 2002 might have resulted in less material being washed into the storm drain system. That material was likely removed by street sweeping. Conversely, the increase in removal rates in the 2003 to 2005 period was probably due to above average levels of precipitation.

3.3.3 Storm Drain Cleaning Data by Watershed

The Storm Drain Cleaning data for 2010, showing the total number of inlets and lengths of pipe cleaned for each of Baltimore County's fourteen (14) major watersheds, are displayed in Table 3-3.

Table 3-3: 2010 Material Removed in Cubic Yards by Watershed

Watershed	Inlets Cleaned	Inlet Volume Cleaned (Cu. yd.)	Length of Pipe Cleaned (Ft.)	Pipe Volume Cleaned (Cu. yd.)	Total Volume (Cu. yd.)
Upper Western Shore					
Deer Creek	0	0	0	0	0
Prettyboy Reservoir	0	0	0	0	0
Loch Raven Reservoir	27	23.5	1330	23.1	46.6
Lower Gunpowder River	9	9.4	190	2.2	11.6
Little Gunpowder Falls	8	9.0	375	4.3	13.3
Bird River	12	4.8	964	18.7	23.5
Gunpowder River	8	0.4	285	3.1	3.5
Middle River	16	0.5	405	4.6	5.1
UWS Totals	80	47.6	3,549	56.0	103.6
Patapsco/Back River					
Liberty Reservoir	2	1.0	135	2.4	3.3
Patapsco River	58	82.6	1948	30.0	112.5
Gwynns Falls	60	91.4	2325	46.7	138.1
Jones Falls	26	21.5	1017	9.8	31.3
Back River	56	58.3	2692	54.5	112.8
Baltimore Harbor	31	52.1	1644	29.1	81.2
Patapsco/Back River Totals	233	306.9	9761	172.5	479.2
County Totals	**313**	**354.5**	**13,310**	**228.5**	**582.8**

Around 82% of the material removed from the storm drain system was removed from the heavily urbanized Patapsco/Back River Basin with Gwynns Falls, Patapsco River, and Back River having the highest amounts removed.

In the fall of 2005, a study was initiated on the pollutant removal effectiveness of street sweeping and storm drain cleaning. This study was funded by the Chesapeake Bay Program and led by the Center for Watershed Protection and UMBC. Both Baltimore County and Baltimore City were partners in this research effort. Baltimore County specifically looked at the storm drain cleaning portion of the study by measuring monthly accumulation rates for 100 inlets in coastal plain commercial/industrial and residential and piedmont commercial/industrial and residential. Baltimore County conducted sampling and chemical analysis of the material from a subset of the inlets. The results from this study are used to estimate pollutant load reductions from street sweeping and storm drain cleaning activities. The study, entitled "Deriving Reliable Pollutant Removal Rates for Municipal Street Sweeping and Storm Drain Cleanout Programs in the Chesapeake Bay Basin", is available for free download at http://www.cwp.org/Resource_Library/Restoration_and_Watershed_Stewardship/municipal.htm

The composition of 16 inlets sampled in spring and fall of 2006 was divided into three categories; sediment, leaves (organic matter), and trash. The weight and volume of each component was determined for each inlet sampled. In the spring, sediment accounted for 63.5%,

leaves 28.8%, and trash 7.7% of the material accumulated in the inlets. In the fall, sediment accounted for 61.3%, leaves 31.0%, and trash 7.7% of the material accumulated in the inlets. An ANOVA based on a 2 x 2 x 2 factorial design (land use, physiographic province, sampling round) was conducted. This analysis found no significant differences between the design factors. The average bulk density for the spring was 330.7 pounds/cubic yard of material and for the fall 331.4 pounds/cubic yard of material. The following formula was used to determine kilograms of material per cubic yard:

331 pounds/cubic yard x 0.45 kilograms/pound = 148.95 kilograms/cubic yard

The derived kilograms/cubic yard was then multiplied by the total cubic yards of material removed from each watershed in 2010 to determine the total kilograms of material removed. These results were then multiplied by the average concentrations for each pollutant, based on the results from the study above, to determine the milligrams of pollutant removed. The concentrations used were **1,825.92 mg/kg total nitrogen and 707.95 mg/kg total phosphorus.** Finally, the milligrams of pollutant were back calculated for pounds of pollutant removed using the conversion of 2.205×10^{-6} *lbs/mg*.

The amount of each pollutant removed and urban impervious area treated from each major watershed in the county during 2010 is shown in Table 3-4. Impervious Urban Area Treated was calculated by dividing the pounds of pollutant removed per watershed by the Chesapeake Bay Program per acre pollutant loading rate for impervious urban area, which, based on the Phase 5.2 Watershed Model, is 14.1 lbs/acre for total nitrogen and 2.26 lbs/acre for total phosphorous. The pollutants removed from the Patapsco/Back River Basin watersheds were nearly five times the amounts removed from the Upper Western Shore watersheds.

Table 3-4: 2010 Storm Drain Cleaning Program Pollutant Removal (Pounds) and Impervious Urban Acres Treated

Watershed	TN #s	Impervious Urban Acres Treated for TN	TP #s	Impervious Urban Acres Treated for TP	TSS
Upper Western Shore					
Deer Creek	0	0.0	0	0.0	0
Prettyboy Reservoir	0	0.0	0	0.0	0
Loch Raven Reservoir	27.9	2.0	10.8	4.8	15,424
Lower Gunpowder River	7.0	0.5	2.7	1.2	3,846
Little Gunpowder Falls	8.0	0.6	3.1	1.4	4,406
Bird River	14.1	1.0	5.5	2.4	7,788
Gunpowder River	2.1	0.1	0.8	0.4	1,160
Middle River	3.1	0.2	1.2	0.5	1,686
UWS Totals	**62.2**	**4.4**	**24.1**	**10.7**	**34,310**
Patapsco/Back River					
Liberty Reservoir	0.0	0.0	0.0	0.0	0
Patapsco River	67.5	4.8	26.2	11.6	37,251
Gwynns Falls	82.8	5.9	32.1	14.2	45,720
Jones Falls	18.7	1.3	7.3	3.2	10,348
Back River	67.6	4.8	26.2	11.6	37,339
Baltimore Harbor	48.7	3.5	18.9	8.4	26,879
Patapsco/Back River Totals	**285.3**	**20.3**	**110.7**	**49.0**	**15,7537**
County Totals	**347.5**	**24.7**	**134.8**	**59.7**	**191,847**

3.3.4 Program Summary – Storm Drain Cleaning

In seventeen years, the storm drain-cleaning program has removed ~30,000 cubic yards of material from the Baltimore County storm drain system. At 331 pounds per cubic yard, that amounts to approximately 9.9 million pounds. Without intervention, this material would have eventually entered our waterways.

3.4 Street Sweeping

3.4.1 Street Sweeping Overview

Removing materials such as trash, sediment, and debris, from public streets also results in a reduction of the pollutant load (toxins and nutrients) that could have entered waterways. Baltimore County removes these materials by utilizing a street sweeping program managed by the Bureau of Highways. Seven employees operate seven sweepers on a daily basis, following prescribed routes.

The data on how many street miles are swept and tonnage collected is recorded by the Department of Public Works and submitted to EPS on an annual basis. Table 3-5 shows this data for each of the past twenty years. Figure 3-5 provides graphic displays of the information contained in Table 3-5. The removal rates or productivity is also expressed in a tons-per-mile ratio for each year in the table. Approximately 0.5 tons of material was collected each mile from 1991 through 1995, with a spike to 0.88 in 1994. In 1994, during a particularly severe winter, the county experienced a salt shortage and found it necessary to utilize slag to provide traction on the icy roads. Subsequently, the material removed per mile spiked to the highest-ever that year. In 1996, the 0.5 tons/mile average began to decrease, reaching its lowest point of 0.112 tons/mile in 1998. The decreasing trend began in 1996 and leveled off between 1998 and 2001 at approximately 0.11 tons/mile. Since then the efficiency has been stable at about 0.30 tons/mile.

Table 3-5: Annual Street Sweeping Summary

Year	Miles Swept	Tons Collected	Tons/Mile
1991	7,566	3,792	0.50
1992	6,663	3,161	0.47
1993	6,300	3,108	0.49
1994	8,532	7,473	0.88
1995	5,333	2,990	0.56
1996	8,605	2,990	0.35
1997	14,785	3,177	0.21
1998	24,863	2,792	0.11
1999	24,968	2,880	0.12
2000	21,949	2,491	0.11
2001	12,147	1,395	0.12
2002	7,800	2,364	0.30
2003	8,640	2,592	0.30
2004	6,617	1,985	0.29
2005	6,126	1,838	0.30
2006	6,306	1,892	0.30
2007	5,133	1,540	0.30
2008	4,110	1,233	0.30
2009	3,972	1,192	0.30
2010	3,937	1,181	0.30
Totals	**186,443**	**49,693**	**20 yr avg. = 0.33**

The current productivity is about two-thirds of the rate in the first five years of the program. The decline in productivity does not necessarily indicate a serious problem. It may simply indicate that the bulk of sediment and debris accumulated over many years was removed during the early years of the program, as might be expected. Without any major sediment influx (e.g. more cinders used for snow removal), street sweeping efficiency may have reached a maintenance level where it is simply keeping up with the average annual loading. Optimizing the program's performance may now depend mostly on fine-tuning the interrelated activities, for example a route analysis could lead to prioritizing and redefining the sweeping routes, and concentrating efforts more on the commercial areas.

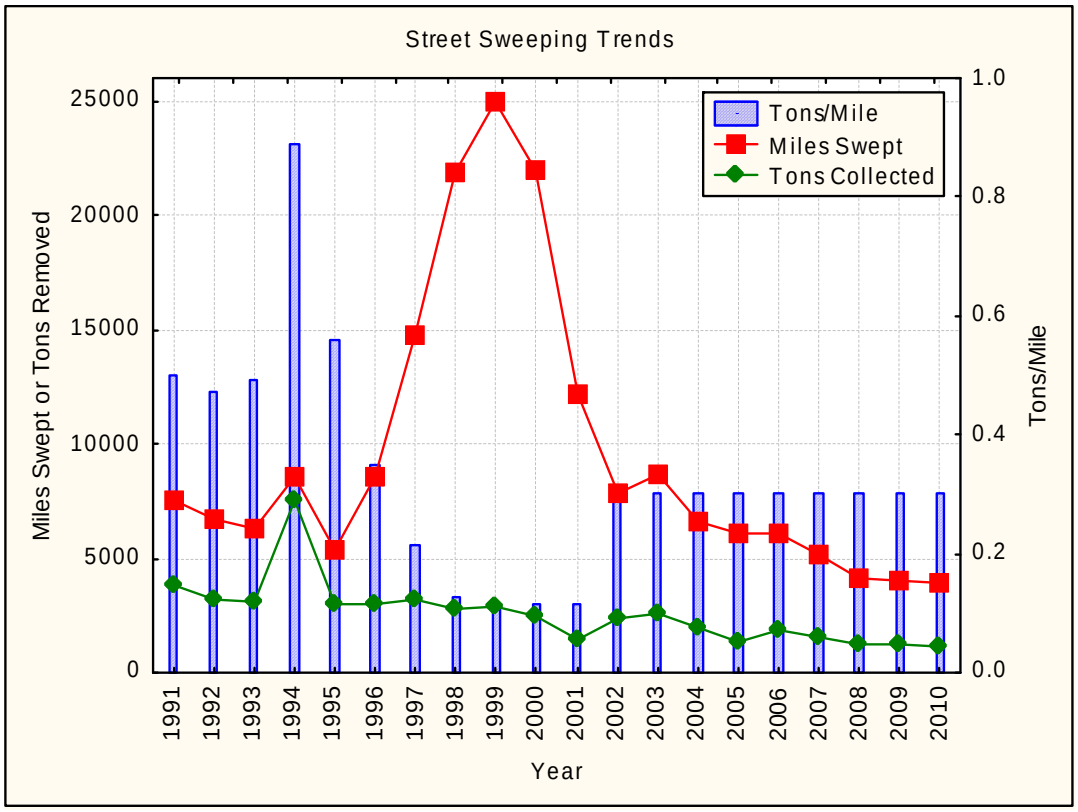

Figure 3-5: Miles of Street Swept, Tons of Material Removed, and Tons/Mile Swept

3.4.2 Street Sweeping by Watershed

Utilizing the same methodology used to calculate Storm Drain Cleaning Program pollutant removal rates, the reduction in pollutant loading attributable to the Street Sweeping Program was also quantified. The tonnage of material removed is reported on a countywide basis. In order to determine the material removed by watershed, it is assumed that the pollutant loading per pound of debris did not vary among watersheds or land uses. The street sweeping routes were digitized into a GIS map and then overlaid with the watershed boundaries to determine the proportion of swept miles per watershed. The breakdown into watersheds is based on the actual miles available for sweeping, without regard to the number of repeat visits. The results are displayed in Table 3-6.

Table 3-6: 2010 Street Sweeping Program – Proportion of Swept Miles

Watershed	Route Miles (1 circuit)	Percent of Total Miles
Upper Western Shore Watersheds		
Deer Creek	0	0
Prettyboy Reservoir	0	0
Loch Raven Reservoir	142.8	11.5
Lower Gunpowder Falls	78.8	6.4
Little Gunpowder Falls	17.0	1.4
Bird River	72.6	5.9
Gunpowder River	7.7	0.6
Middle River	27.2	2.2
UWS Totals	**346.1**	**28%**
Patapsco/Back River Watersheds		
Liberty Reservoir	6.9	0.6
Patapsco River	170.0	13.8
Gwynns Falls	321.4	26.0
Jones Falls	68.3	5.5
Back River	229.0	18.5
Baltimore Harbor	93.8	7.6
Patapsco/Back River Totals	**889.4**	**72%**
Totals	**1,235.5**	**100%**

Unlike the Storm Drain Cleaning Program program, the exact location where the material is collected is not known. A basic assumption was made that material swept from the county's streets was the same, as far as pollutants are concerned, to the material that washes off the streets and into its storm drains. The tonnage of swept material per watershed was determined by multiplying the total tonnage by the proportion of miles in each watershed, and was then converted to pounds. Using the pollutant concentrations from the Street Sweeping- Inlet Cleaning study, the distribution of pounds of pollutants removed and Impervious Urban Acres Treated in 2010 from each of the major watersheds in the county was calculated and is shown in Table 3-7. Impervious Urban Area Treated was calculated by dividing the pounds of pollutant removed per watershed by the Chesapeake Bay Program per acre pollutant loading rate for impervious urban area.

Table 3-7: 2010 Street Sweeping Program Pollutant Removal (Pounds) and Impervious Urban Acres Treated

Watershed TN	Pounds Removed	TN #s	Impervious Urban Acres Treated for TN	TP #s	Impervious Urban Acres Treated for TP
Upper Western Shore					
Deer Creek	0	0.0	0.0	0.0	0.0
Prettyboy Reservoir	0	0.0	0.0	0.0	0.0
Loch Raven Reservoir	271,630	496.1	35.2	192.3	85.1
Lower Gunpowder River	151,168	276.1	19.6	107.0	47.4
Little Gunpowder Falls	33,068	60.4	4.3	23.4	10.4
Bird River	139,358	254.5	18.0	98.7	43.7
Gunpowder River	14,172	25.9	1.8	10.0	4.4
Middle River	51,964	94.9	6.7	36.8	16.3
UWS Totals	**661,360**	**1,207.8**	**85.7**	**468.3**	**207.2**
Patapsco/Back River					
Liberty	14,172	25.9	1.8	10.0	4.4
Patapsco River	325,956	595.3	42.2	230.8	102.1
Gwynns Falls	614,120	1,121.5	79.5	434.8	192.4
Jones Falls	129,910	237.2	16.8	92.0	40.7
Back River	436,970	798.0	56.6	309.4	136.9
Baltimore Harbor	179,512	327.8	23.3	127.1	56.2
Patapsco/Back River Totals	1,700,640	**3,105.8**	**220.3**	**1,204.2**	**532.8**
Annual County Totals	**2,362,000**	**4,313.6**	**306.0**	**1,672.5**	**740.0**

3.4.3 Program Summary - Street Sweeping

From 1991 to 2010, the Street Sweeping program removed almost 49,700 tons of debris from Baltimore County streets (Table 3-5). Without this program, this debris would have entered waterways.

The Street Sweeping program appears to have reached a maintenance level and now needs to be evaluated to determine where the most significant amounts of sediments are consistently collected. The number of times each route is swept each year, the land use, and other variables need to be factored into the program to increase its efficiency.

Both the Storm Drain Cleaning and Street Sweeping programs make a contribution to the County's overall goal of reducing sediment and other pollutants, including toxics and nutrients that enter the waters of the State. The tonnage collected by the street sweepers and storm drain cleaning trucks is not just pollutant-laden sediment, but includes significant amounts of paper, plastic, glass, wood, aluminum cans, and metal objects. During rainy weather the lighter, more floatable debris is washed into the storm drains, which is then removed by the Storm Drain Cleaning program instead of by the street sweepers.

3.5 Household Hazardous Wastes (HHW)

Household hazardous wastes are specifically exempted from the Maryland State Recycling Act. The Household Hazardous Waste Recycling Program was initiated by Baltimore County EPS in response to numerous requests from citizens and elected officials concerned with disposal of hazardous wastes from their own homes.

Baltimore County citizens can drop off household hazardous waste materials for recycling or proper disposal at a permanent processing facility located at the Eastern Sanitary Landfill Solid Waste Management Facility. This facility is operated by EPS, in cooperation with the

Department of Public Works (DPW), Monday through Saturday, from April through November. Materials dropped off for processing include unwanted household chemicals, such as paints, flammable cleaning solvents, automotive fluids, pesticides, pool chemicals, acids, mercury thermometers, gasoline, corrosive material, etc. Table 3-8 provides a listing of material collected and amounts since 2003. In addition, EPS holds two one-day collection events annually, in the spring and fall, at different locations around Baltimore County.

Table 3-8: Household Hazardous Waste Recycled (2003-2010)

Material Type	2003	2004	2005	2006	2007	2008	2009	2010
Total Liquids (gallons)								
Flammables	3,685	9,570	8,910	9,130	7,495	5,885	7,260	7,975
Ammonia	5	2	7	22	5	****	****	****
Corrosive	495	**	**	**	**	**	**	**
PCBs						**	**	**
Gasoline	2,393	2,914	2,043	2,727	2,202	2,884	3,607	4,235
Motor oil	93,251	100,735	93,277	85,565	86,055	75,676	81,353	113,166
Antifreeze	5,815	5,874	5,378	4,214	6,808	5,926	4,548	6,906
Paint (Latex)	5,815	14,480	16,060	12,685	12,445	11,555	13,560	13,690
(Liquid) Totals		133,575	125,675	114,343	115,010	101,926	110,328	137,997
Total Solids (pounds)								
Corrosive		5,250	5,744	8,860	8,740	8,698	11,681	7,400
Pesticides	8,930	14,140	16,150	13,630	18,256	13,685	11,031	6,870
Batteries (auto)	280,000	294,300	160,920	358,040	219,640	91,840	176,320	131,800
Batteries (rechargeable)	***	***	***	***	578	6,372	1,238	2,089
Cylinders (propane)	79,480	38,980	29,720	42,420	28,660	23,820	14,560	11,460
Mercury	168	125	50	40	112	22	42	54
Reactives	10	40	15	19	15	18	21	1
Toxics	40	360	105	14	199	257	12	61
Oxidizers	459	1,240	1,985	1,423	1,664	1,747	1,796	500
Freon	***	***	***	***	923	773	742	863
PCBs						5	1	1,690
Electronics	***	***	***	***	***	***	2,386,580	4,488,940
Asbestos Waste	***	***	***	***	***	***	***	111,180
(solids) totals		354,435	214,689	424,446	278,787	147,237	2,604,024	4,762,908
Total Solids (number of items)								
Fluorescent Light bulbs	***	***	***	***	2,564	7,945	22,449	46,767
Ammunition (rounds, explosives, fireworks)	***	***	***	***	1,011	400	815	2,779
(solids) totals		*******	*******	*******	**3,575**	**8,345**	**23,264**	**49,546**

** Changed from reporting in gallons to pounds
*** Not recorded for these years
**** Ammonia is now being included with the corrosives

Asbestos waste has been handled appropriately since the 1980's, however this is the first report to include it as household hazardous waste, with over 110,000 pounds collected.

In 2010, the weights for PCBs (841 lbs) and PCB ballasts (849 lbs) were combined. The large quantity of PCBs is a result of flammable paint waste which was found to be contaminated with PCB fluid. There was a single one-time purge of PCB ballasts during the renovation of the Northeast Regional Recreation Center. The weight for PCB ballasts is mostly in the housing; only a small portion of the weight (not known) is actually PCBs.

Motor oil remains the most frequently recycled household hazardous waste. Motor oil and antifreeze are recycled throughout the county at drop-off facilities operated by DPW, in cooperation with the Maryland Environmental Service (MES). Statistics for recycled motor oil and anti-freeze for all participating collection facilities have been reported since 1991. Oil and antifreeze recycling is reported through MES, local government, and private facility partnership efforts. Additional unreported recycling of oil and anti-freeze occurs through a network of 65 private sector collection centers across the county, most of which are neighborhood gas/service stations. EPS provided assistance in establishing the motor oil and antifreeze recycling program at the DPW facilities. County drop-off sites include landfills, transfer stations, two rural DPW Highways shops, and the Bowley's Quarters Marina.

Access for citizens to recycle household hazardous waste expanded in 2007 with the opening of two drop off centers, one in Cockeysville and the other in Halethorpe. This coincided with the ability to accept fluorescent light bulbs. The decrease in auto batteries recycled in 2008 may be due to the sluggish economy; people may have sold their batteries to salvage yards, instead of dropping them off at the landfill. Also in 2008, auto batteries were being stolen from the landfill, and as a result the area was fenced and locked. In 2009, the quantity of batteries collected returned to a more typical level, but in 2010 collection was down again at 131,800 pounds.

The various industries that reuse the materials, recycled oils and metals in particular, pay the market-based price for them. Because people that recycle essentially donate the material, the current rates generate sufficient revenue to pay the administrative costs of the program, which is facilitated by MES. Individual commercial facilities that do not participate in the program, such as garages, gasoline stations, and tire and auto centers, are not included. They are typically paid directly by scheduled collectors.

Figure 3-6 displays the estimated statistics for recycled flammables, gasoline and pesticides. Of note is the sharp drop in the amount of flammables and pesticides collected in 2003. Only one single-day event was held that year; the fall event was cancelled due to hurricane Isabel.

With the exception of 2003, collection of flammables increased steadily from 1998 to 2004. Paint sludge is now bulked together into the same drums with other flammable material. The greatest volume of flammables collected for recycling was 9,570 gallons in 2004. The low since 2004 was 5,885 gallons in 2008.

The amount of recycled gasoline had remained relatively steady in a range of 2,000 to 3,000 gallons per year, until 2009 when over 3,600 gallons were collected. In 2010, an all-time high of 4,235 gallons were collected.

The quantity of pesticides collected reached a peak in 2007 of 18,256 pounds, and has shown declines for the three subsequent years. In 2010, just 6,870 pounds of pesticides were collected, exceeding only the first pesticide collection in 2000.

Mercury was added to the list of solid wastes in 2001; 54 pounds were collected this year. There are mercury TMDLs for the Prettyboy, Liberty and Loch Raven Reservoirs. Although mercury

contamination is mainly attributed to atmospheric deposition, this program helps to meet the reduction of mercury that could potentially end up in our waterways.

Beginning in October 2009, it became illegal in Baltimore County for residents to dispose of household electronics as trash. Collection of unwanted electronics for recycling began that year and very quickly became a major source of material to be diverted from the waste stream. Electronics contain mercury, lead, cadmium, and arsenic which should not go into a landfill or waste-to-energy facilities. Types of electronics collected for recycling include computer equipment, televisions, VCRs, DVD players, telephones, stereos, fax machines, and video display devices. In 2010, the quantity of electronics collected was 4,488,940 pounds, a near doubling of the amount collected in 2009. Three drop off centers accept electronics throughout the year.

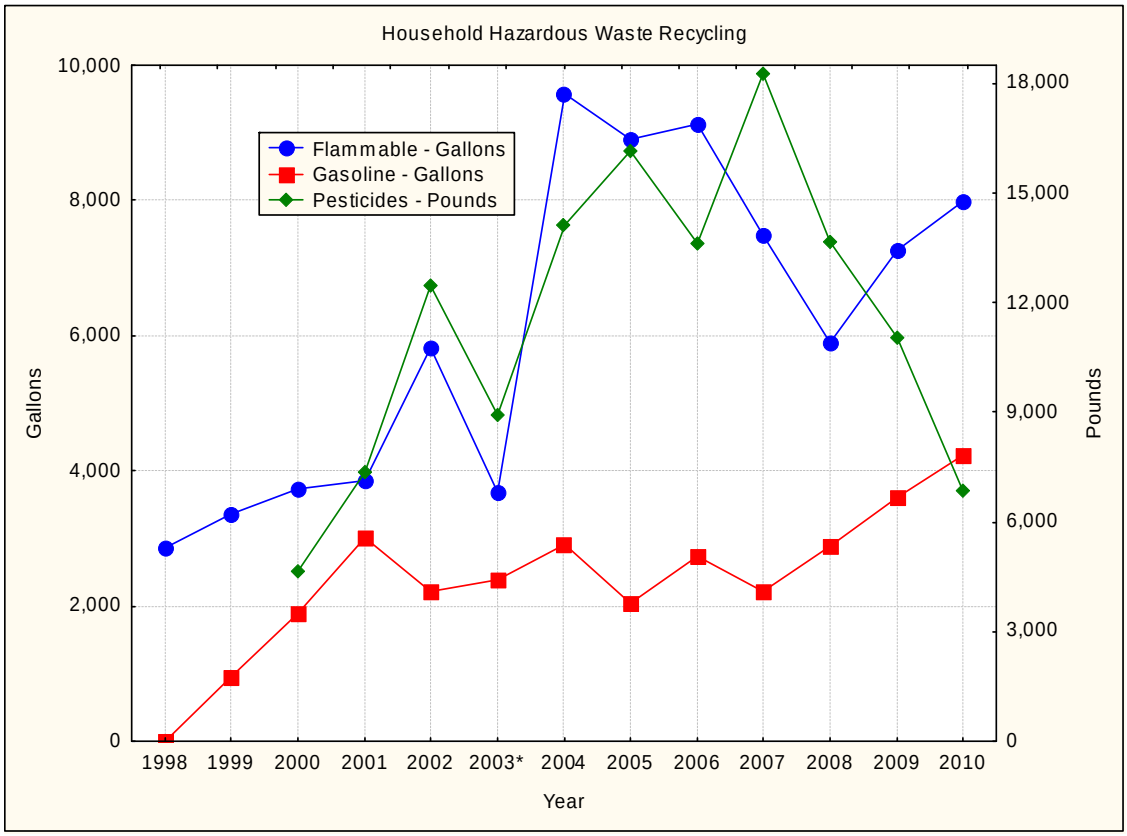

Figure 3-6. Household Hazardous Waste Recycling of Flammables, Gasoline, and Pesticides from 1998 to 2010
* Only one collection event held in 2003; fall collection was cancelled due to a hurricane.

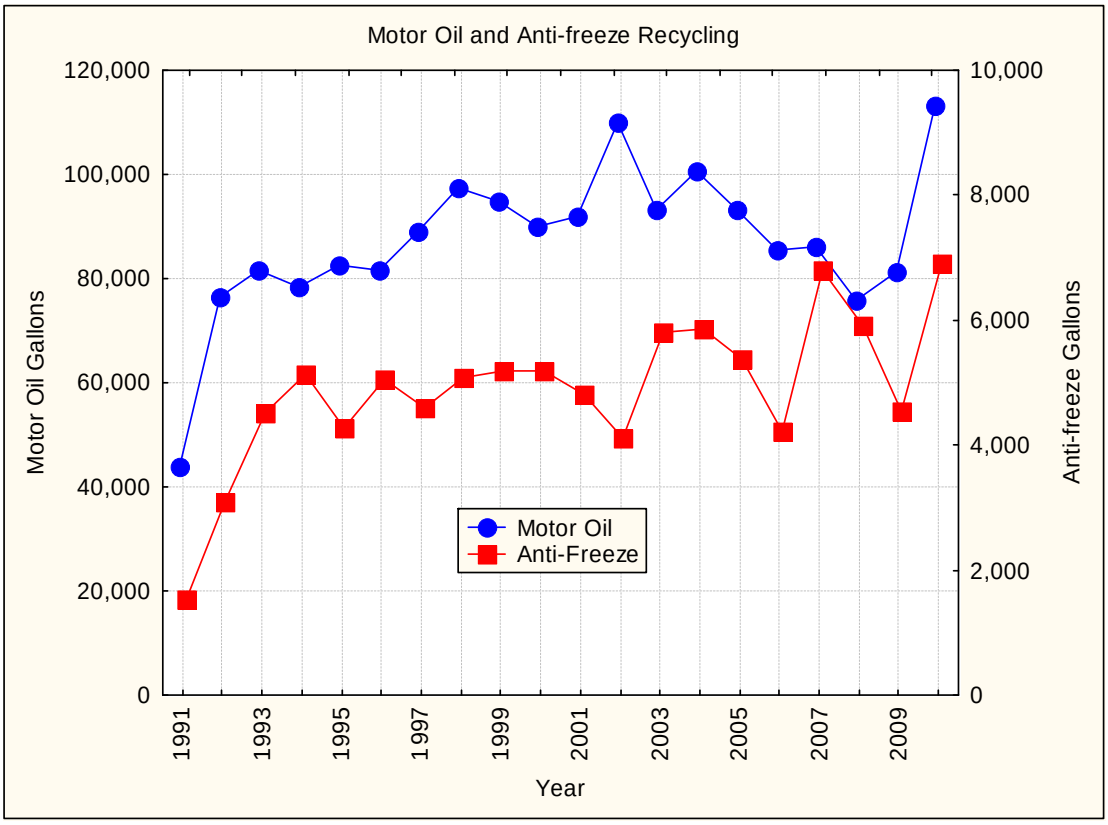

Figure 3-7. Motor Oil and Anti-freeze Recycled from 1991 through 2010

As can be seen in Figure 3-7, the recycling of motor oil was typically between 90,000 and 100,000 gallons from 1998 to 2005. It was between 75,000 and 85,000 for the following four years. In 2010, motor oil collection reached a high of 113,166 gallons, only the third time to exceed 100,000 gallons. A total of over 1,700,000 gallons of motor oil has been collected for recycling since 1991. Since 1993, the annual volume of recycled anti-freeze, has typically been between 5,000 to 6,000 gallons. The exceptions are 2006 (4,214 gallons), 2009 (4,548 gallons), and 2010 (6,906 gallons). Over 90,000 gallons of anti-freeze have been recycled in Baltimore County since 1991.

As evidenced by the continued citizen participation, EPS's recycling program for Household Hazardous Wastes continues to be a successful program. The contribution to reducing nonpoint source pollution remains significant.

In 2010, fluorescent light bulbs from county buildings were included in the Household Hazardous Waste tallies, which more than doubled the quantity of the previous year. (Not included in the figures for 2009: fluorescent light bulbs collected for recycling from county buildings (9,143), and paint from public schools (60 gallons). Rechargeable lead acid batteries are now consolidated with automotive batteries; alkaline batteries are no longer being recycled. The toxics category now includes pharmaceuticals collected by the Police Department at one-day events (estimated at 50 pounds).

3.6 Fertilizer, Pesticide, and Deicing Statistics

Members of the Baltimore County NPDES Management Committee have submitted statistics for usage of fertilizers, pesticides and deicing materials. Quantities of fertilizers and pesticides are reported in pounds, tons, gallons, and ounces. All results have been converted to pounds for this

report. Fluid measure is assumed to have a density of 7.0 pounds per gallon. The statistics for 2010 by individual agencies are presented in Table 3-9. The amounts used by the entire county are presented in Table 3-10.

Among the county agencies that fertilize and use pesticides, golf courses are consistently the biggest users of these materials. Deicing materials are also used throughout county agencies. Logically, because of its responsibility to clear roads, the DPW– Bureau of Highways remains the biggest user of deicing materials. In 2010, the Bureau of Highways accounted for 99.2% of the deicer material used.

Table 3-9: 2010 County Agency Fertilizer, Pesticide and Deicing Materials Use (in Pounds)

Golf Courses	**Fertilizer**	**Pesticide**	**Deicing**
Diamond Ridge	35,145	6,065	300
Greystone	29,651	7,662	0
Rocky Point	33,648	8,783	300
Fox Hollow (formerly Longview)	35,291	5,780	720
Woodlands	41,580	7,912	300
Golf Course Totals	**175,315**	**36,202**	**1,620**
Agency			
Catonsville Community College	208	Uses Contractor	328,500
Essex Community College	350	428	544,600
Dundalk Community College	750	33	110,650
County Public Schools	850	882	131,950
Bureau of Utilities	0	16	0
Bureau of Highways	0	814	161,462,000
Recreation and Parks	4,100	212	145,300
Non-Golf Course Totals	**6,258**	**2,385**	**162,723,000**
Totals Pounds =	**181,573**	**38,587**	**162,724,620**

Table 3-10 shows the annual usage of fertilizer, pesticides and deicing material from 1999 through 2010. Figure 3-8 shows data for Fertilizer and Pesticide Trends and Figure 3-9 shows the data for Deicer and Snowfall.

Table 3-10: Annual Fertilizer, Pesticide and Deicing Materials Used By County Agencies (in Pounds)

Calendar Year	Fertilizer	Pesticide	Deicing Mat.	Snowfall (in.)	Number of Winter Weather Events
1999	275,400	34,320	83,978,000	12.4	8
2000	213,114	21,028	94,467,750	27.2	7
2001	221,609	21,509	48,566,400	7.4	5
2002	200,060	21,229	100,437,859	12.0	7
2003	191,726	22,137	205,164,341	58.0	8
2004	227,309	34,762	147,537,040	8.7	5
2005	133,881	20,899	185,118,740	24.5	7
2006	166,870	29,607	23,888,950	13.1	1
2007	131,191	26,362	156,690,026	14.4	11
2008	113,435	32,059	65,456,420	4.3	15
2009	170,175	35,279	151,208,045	28.6	9
2010	181,573	38,587	162,724,620	58.1	7
Totals	**2,226,343**	**337,778**	**1,425,238,191**		

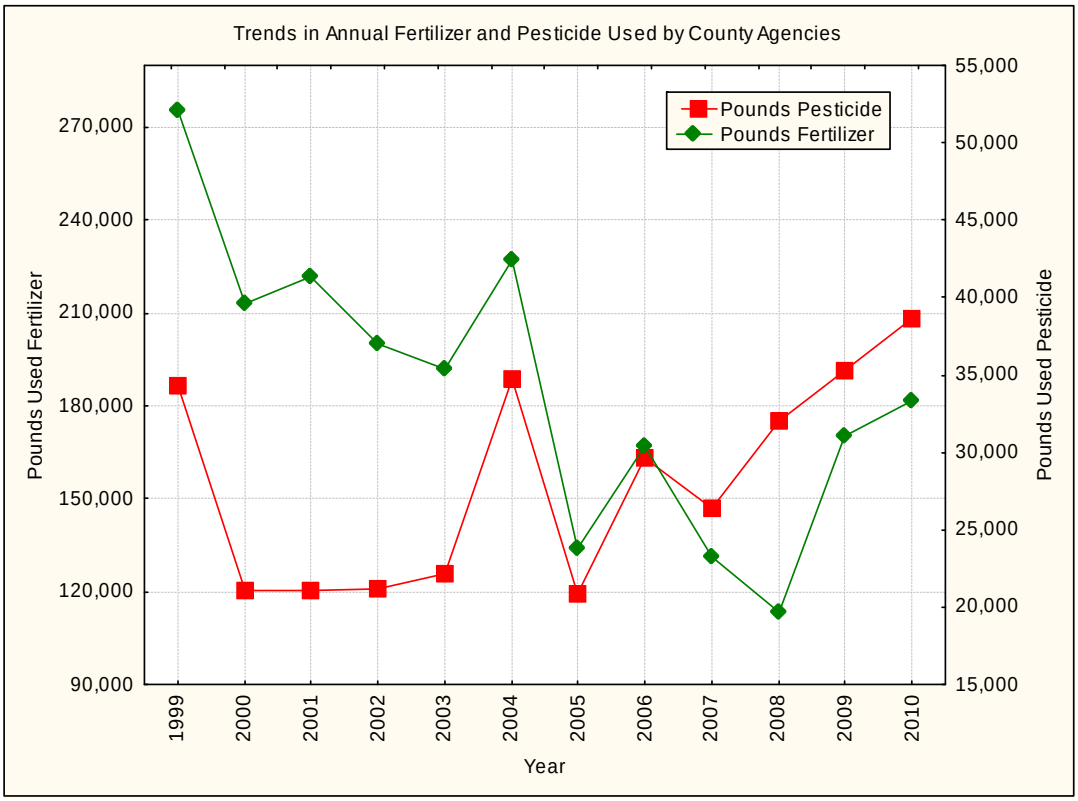

Figure 3-8: Trends in Annual Fertilizer and Pesticide Used by County Agencies

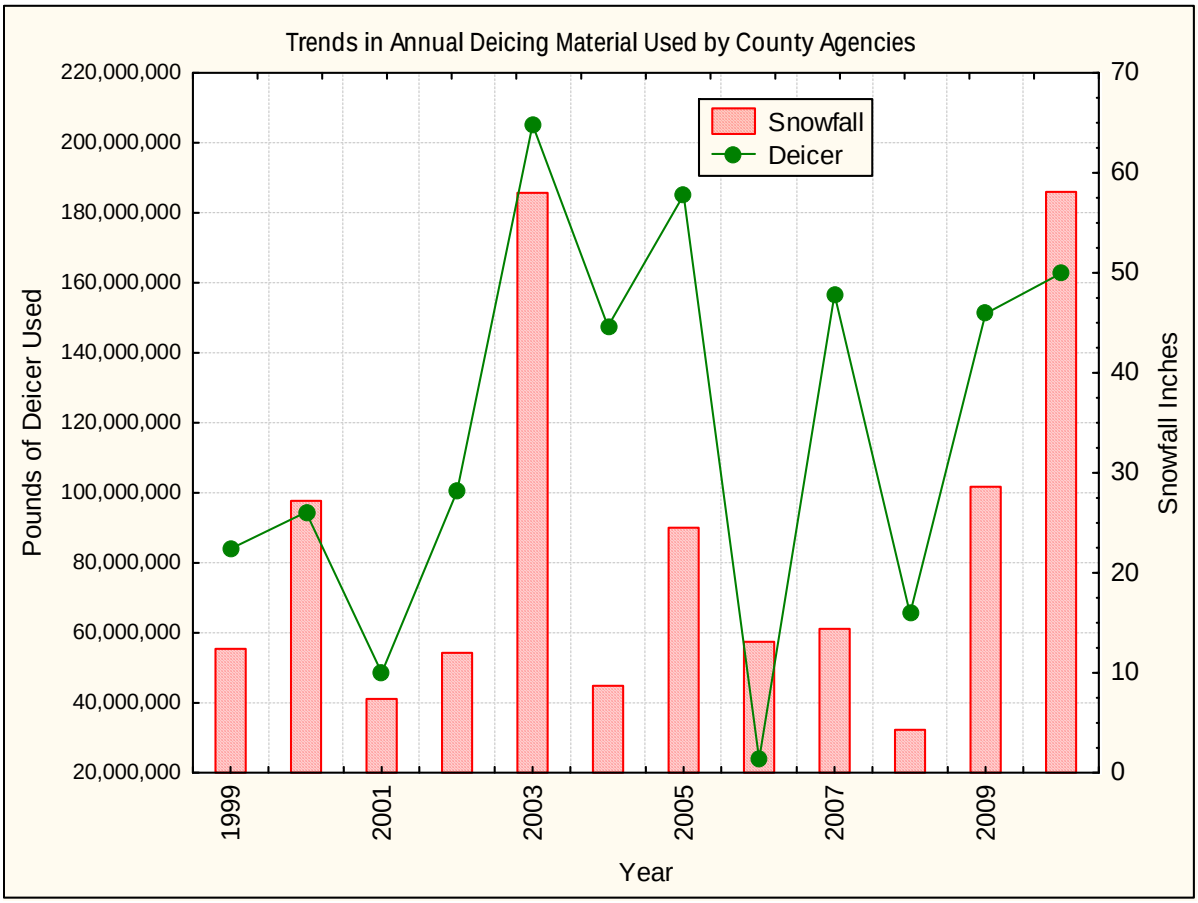

Figure 3-9: Trends in Annual Deicing Material Used by County Agencies

The amount of deicing materials used depends not only on accumulation of snow, but also the number of events. The greatest amount of deicing material used was in 2003, which had 58 inches of snow. In 2010, the snowfall was 58.1 inches, however about 42,000,000 fewer pounds of deicer was applied compared to 2003. Freeze and thaw conditions are not tracked at this time.